



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

Donnan, J. C. C. -

The classification of Opiliones.

(1900)

HARVARD UNIVERSITY.



LIBRARY

OF THE

MUSEUM OF COMPARATIVE ZOÖLOGY

47.195

GIFT OF

Nathan Banks

October 24, 1917.

ON THE CLASSIFICATION OF OPILIONES

BY

J. C. C. LOMAN.

Overgedrukt uit »Tijdschr. d. Ned. Dierk. Vereen.» (2) Dl. VIII. Afl. 1.

Februari 1903.

ON THE CLASSIFICATION OF OPILIONES

BY

J. C. C. LOMAN.

As there have been so many new animal forms described of late, belonging to the above order, some amongst them attracting our attention by their unusual construction, it was to be expected that the systematic arrangement of this group would be considerably modified.

An attempt at obtaining a broader basis for systematic observations will be published shortly. The data provided by comparative anatomy have been utilized as much as possible, for there is no doubt that we shall arrive at a better understanding of the mutual kindred in that way, than by examining merely the external characters, as has been often done up to the present.¹⁾

As the first step in the right direction we hail SÖRENSEN'S work on the Gonyleptidae, the harvest-men of South-America.

Proceeding in the same manner I have come to the conclusion that the forms I have examined should be brought under 3 Sub-ordines.²⁾

In another place³⁾ I have already made mention of this, but without a detailed explanation of the reasons which led to this view.

Now, Pocock made some remarks, the other day, in consequence of this preliminary communication, which made him arrive at a

1) and unfortunately not with this order only!

2) apart from the less known Cyphophthalmi E. S.

3) Zool. Jahrb. Syst. Vol. 16, p. 170.

different conclusion ¹⁾. Owing, probably, to the fact of my provisional details being incomplete, they have not been properly appreciated, nor does the right meaning seem to have been grasped in all instances.

Pocock writes about the position of Sørensen's family of *Triaenonychidae*, which I proposed to raise to the rank of a sub-order: »a family resembling the Laniatores in all essential characters except the presence of a single claw on the tarsi of the fifth and sixth pairs of appendages."

In this I do *not* agree with him.

Further on he adds: »In Lomans's opinion the systematic value assignable to the claws is equal to that of all the structural characters combined."

I cannot agree with him in this respect *either*, I even find this opinion *absurd*.

But it never was my own. This view of the matter was probably assigned to me on account of my having introduced the claws of the hinderlegs in a key to the determination. But, surely, *all* the known differences need not be enumerated in such a table.

It may also be allowed, in elucidation of my opinion, to quote the following paragraph from what I have written about this with regard to the anatomy of *Larifuga* (fam. *Triaenonychidae*): »To judge from the external appearance the genus did not seem to deviate so much from the genuine *Gonyleptidae* as *Gnomulus*; but the internal organs soon proved to me how much I had been mistaken. Instead of finding some similarity, I came across unexpected differences, which, in conjunction with the external characters, showed a wide difference between this *Larifuga* and all other *Opiliones*." ²⁾

For this reason I may briefly sum up here the principal points of difference between the *Insidiatores* and other animals of the order, which I hope to fully point out, by the aid of cuts, in my forthcoming article.

1. The dorsal carapace is somewhat similar to that of *Laniatores*,

1) Ann. Mag. Nat. Hist. (7) Vol. 10, p. 511.

2) translated from: Zool. Jahrb. Syst. Vol. 13, p. 78.

but the fusion of the tergites of the *Oncopodidae*, although this family belongs to the Laniatores, is entirely different. On the other hand it cannot be denied that *Nemastoma* and *Sclerosoma*, although really Palpatores, show a great affinity with the Insidiatores in the matter of segmentation, as all the anterior tergites develop into a scutum while the posterior four remain unfused. It therefore does not seem to be reasonable to attach decisive systematic importance to the segmentation of the opisthosoma.

2. At the first glance the sternal parts of the body look more like those of the Laniatores than those of the Palpatores. But when, instead of comparing only the *direction* in which the sternum runs, its peculiar *form* is also compared — which I deem more important — it becomes obvious how much the sternum, continuously widening out towards the posterior part (which can very well be compared to that of *Nemastoma* and *Trogulus*) differs from the linear form of that of the Laniatores.

The third maxilla, an appendage of the coxa of the second pair of ambulatory legs, is distinct and movable in the Phalangiidae and Ischyropsalidae (thus in the Apagosterni Pocock); on the other hand it does not exist in the Eupagosterni Pocock. With the Laniatores this organ is sometimes prominent, in other instances very little developed, but always of a piece with the coxa. In the Insidiatores I found it fairly large, rather lowly triangular, and with a broad base fused with its coxa.

3. The palpi of Insidiatores are of a very original structure. Their short, often monstrously big joints are always armed with characteristic thorns: heavy, strong cones, provided with hairs growing sideways *unter the top*. By means of these palpi alone one would at once recognize the sub-order.

4. Each of the short legs is armed with only one large terminal claw; that of the posterior two pairs has moreover a much smaller side-claw on both sides. The history of the development of the claws in the three sub-orders, too, tells us of the existence of fundamental differences, which however are difficult to explain without illustrations.

5. The digestive apparatus I found to be no clear means of distinction. Among the Laniatores there are some whose coecal pouches are almost as complicated as those of our common Phalangids, but other again have guts with only few ramifications, and which are more like those of Insidiatores.

6. The nervous system of the Laniatores shows typically fused abdominal ganglia (as SÖRENSEN has already described). In the Insidiatores we find longish carrot-shaped *unfused* ganglia in the abdomen, resembling the short pear-shaped ones of the Palpatores.

7. To finish with: the genital organs show some vital differences. Here again it is difficult to give a clear idea without drawings. Suffice it therefore to state that the penis of Insidiatores is always short and stout, and provided with a powerful extensor glandis, not exactly of the same structure as that of Palpatores. It is known that the Laniatores are entirely without this glans and muscle. Besides, the vasa deferentia, morphologically, are so aberrant, that those of the Laniatores are much more like those of the Palpatores than of the Insidiatores.

About the sub-order of the *Cyphophthalmi* E. S. I have no firm conviction. Pocock is ready to accept this division, but SÖRENSEN, who discussed the subject some time ago, even expresses a doubt about its right of existence, and he thinks it not impossible that the family *Sironidae* ought to be classified with the Palpatores. We have better await further investigations.

As to the *Oncopodidae*, which differ in some important characters of greater value than family-characters, they need be separated from the remaining Laniatores.

Although I am therefore in many respects of Pocock's opinion, I cannot follow him, where he assumes the Insidiatores to be nearly allied to the Laniatores. The differences sketched above appear to me to be so radical that we are bound to give more prominence to them.

I propose, therefore, the following classification of the group:

Suborder I. *Palpatores* Thor.

- a.* Apagosterni Pocock (fam. Phalangiidae, Ischyropsalidae)
- b.* Eupagosterni Pocock (fam. Nemastomatidae, Trogulidae, etc.)

II. *Laniatores* Thor.

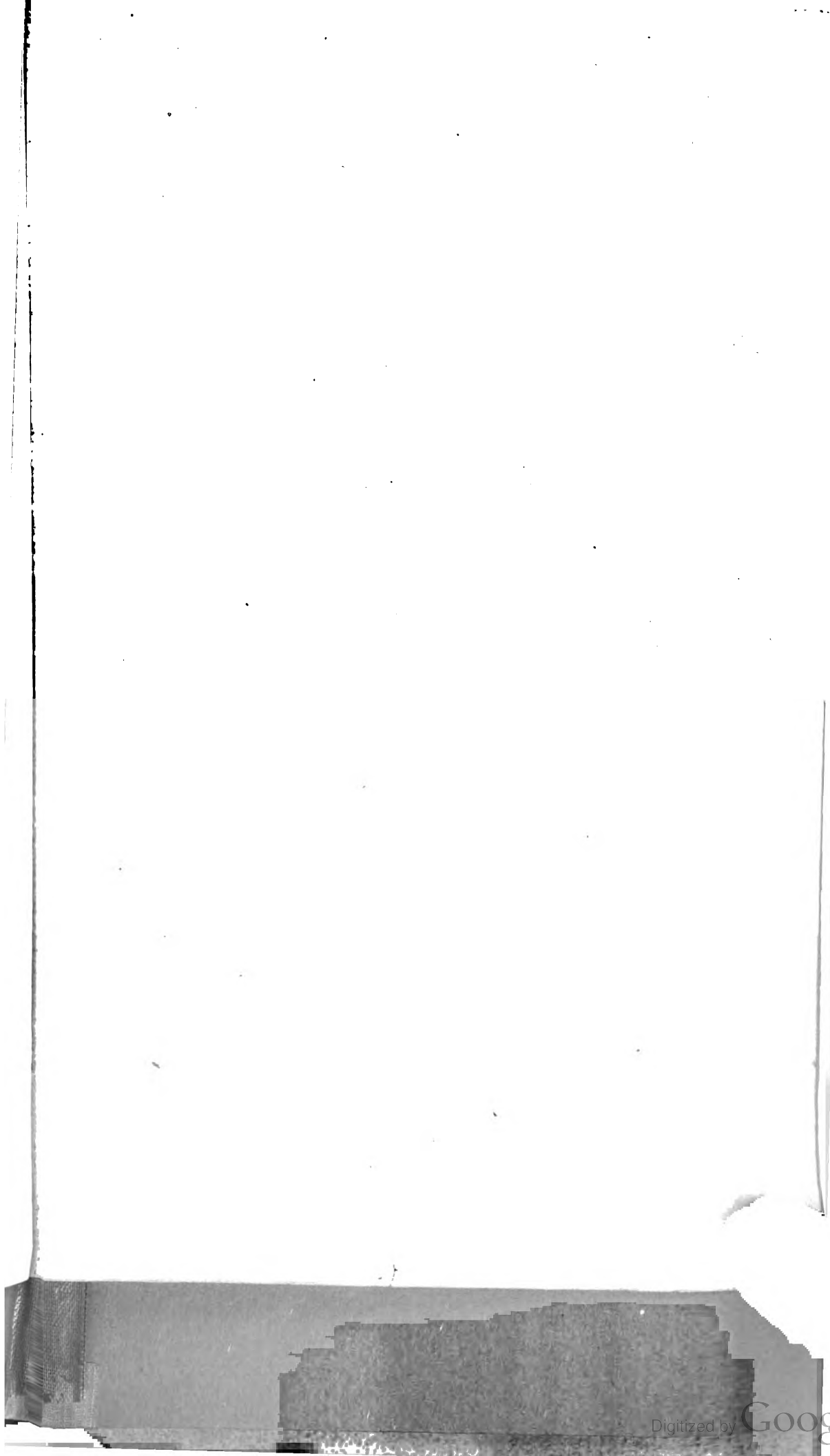
- a.* Sterrhonoti *n.* (fam. Oncopodidae)
- b.* Camptonoti *n.* (fam. Gonyleptidae, Epedanidae, Assamiidae, etc.)

III. *Insidiatores* Loman.

(fam. Triaenonychidae, Adaeidae, etc.)

IV. (?) *Cyphophthalmi* E. S.

(= Anepignathi Thor.) (fam. Sironidae.)



Gaylord Bros.
Makers
Syracuse, N. Y.
PAT. JAN. 21, 1908



3 2044 107

